

# Novel Concept for Retail Cash Drawer Capable of Detecting and Temporally Demarcating Employee Theft Events

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Simon Edwards

Research Acceleration Initiative

## **Introduction**

Retailers lose millions of dollars per year due to theft by the very cashiers they entrust to handle cash transactions. Although businesses would probably prefer not to deal in cash whatsoever, paper money is likely to remain legal tender for the foreseeable future.

Investigations into this type of theft are costly and time consuming. Meaningful legal action against thieves of this sort requires that a specific, minimum amount of currency is provably pilfered. Critical to these investigations is ascertaining the exact moment at which a cash drawer crosses from being in proper balance into being, “short.” The ability to quickly and reliably pinpoint this key moment would enable closer scrutiny of video surveillance and would drastically reduce the cost and length of theft investigations of this sort. Balances could be tracked in near-real-time rather than needing to wait until the end of the shift or the business day to assess the contents of a till.

## **Abstract**

A cash drawer equipped with an inexpensive infrared illumination system could be used to measure through absorptiometry the number of bills in a compartment, as well as their type. Infrared light is absorbed to an extent that is largely unique by bills of each denomination and “series year.” Infrared light is well-suited for this purpose as it is largely agnostic to variables such as moisture content or soiling of currency that might otherwise throw off estimates of this nature. Measurements of the extent to which the cash contents of a compartment of a till absorb emitted light may be even more useful if multiple samplings using multiple, specific frequencies of IR are used.

Such a drawer should feature a bottom in which each compartment’s floor consists of a wide-area IR emitter oriented upward, and rather than a mere metal clamp and spring, a wide-area light meter that serves both as a clamp and a crucial component of the anti-theft mechanism is used to restrain currency while the drawer is open.

If, for instance, this anti-theft cash drawer determines that change of a \$10 bill, a \$5 bill, and a \$1 bill should be dispensed in a transaction and upon the closure of the drawer, the IR-based audit of its contents indicates that two \$10 bills were removed (as indicated by substantially more light making it to the light meter,) this transaction could be pinpointed as a likely moment of theft. Intervention

and physical auditing could be performed immediately and offending employees could be promptly removed.

## **Conclusion**

IR absorptiometry has already proven its worth in such low-cost gadgets as oxygen saturation monitors, making it a natural fit as a theft-prevention mechanism in the retail environment.